

State Approaches to Financing New Renewable Energy Projects

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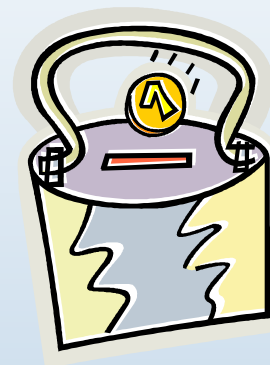
Presentation Overview

- Financial Community Requirements
- Overview Influencers of RE Success
 - Market Conditions
 - Renewable Policies
- Explore Innovative Solutions to Address Barriers (Case Studies)



Financial Community Expectations

- Controls the purse strings of investment
- Would not exist if they continually made bad investments (i.e. no/little return)
 - Despite only funding “winners,” 60% of their investments are unproductive¹
- Hedges risk by investing in multiple sectors at once (not just energy)
 - Will to say “no” and move on to next project



➔ Long list of stringent requirements

1. Zider “How Venture Capital Works,” Harvard Business School (1998).

Financial Community Requirements...

1. Reduce Investment Risk

- Usually require long-term contracts w/creditworthy entities
- Share investment risk with other investors
- Prefer higher returns on investment
- Tax incentives decrease project cost

2. Minimize Energy Resource Risk (how much, when)

3. Environmental Risk (siting and permitting)

4. Technology Risk (prefer commercial, not emerging technologies)

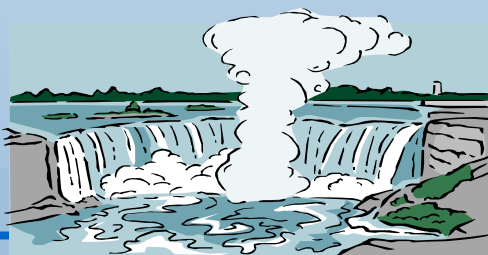
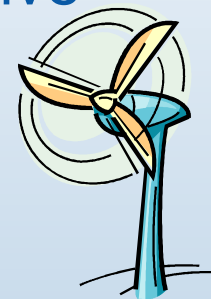
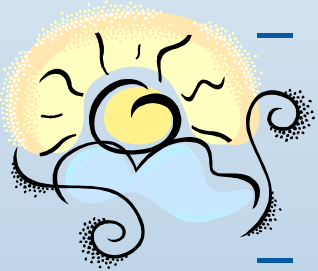
5. Increase Portfolio Diversity

- Invest in several different geographic regions
- Long-term contracts with several different off-takers

...Are More Stringent for Renewables

6. Protect Against Renewable-Specific Risks

- Can still be perceived as “emerging” technology
- Capital intensive and not always cost-competitive
- Difficult to prove resource availability
 - Intermittent output which can vary +/- 20% annually
- Questions surrounding revenue security
 - 8-15 year contracts required by lenders – available?
 - Will generation occur during high-priced, peak demand?
- Technology-specific issues
 - Confidence in biomass supply chain (S-T contracts)
 - Intermittent renewable capacity – little/no value



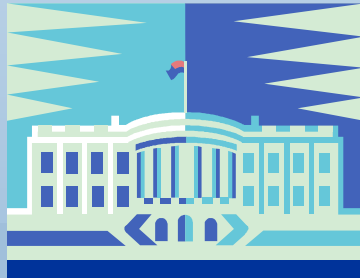
If Financing is the Last Hurdle... Investor Payback is Critical



1. Regulated Electric Market Challenges
 - Regulator must approve utility rate recovery
2. Restructured Electric Markets Challenges
 - Who will do power/REC contracts? How long?
 - Utilities usually out of generation business
 - In many states, retail electric providers have small and uncertain customer base
 - Questions of creditworthiness
3. Voluntary Green Market Challenges
 - Get customers or build new supply first (chick vs. egg)?
 - How to secure and then retain customers?
 - Who guarantees the customer base?

Policies Can Help with Financing (But No Guarantee!)

- Policies to Increase Demand
 - Mandatory requirements (RPS)
 - Create/support voluntary consumer markets
- Renewable Energy Certificate (REC) trading
 - Separates attributes from transmission constraints
- State Renewable Energy Trust Funds
 - Support central & distributed facility development for mandatory and voluntary markets
 - Champion in-state R&D and manufacturing
 - Educate constituency about RE benefits



Case study 1: Texas RPS

- Market Situation
 - Restructured electricity market
 - RPS mandate created by legislature in 1999
 - Incremental 2000 MW by 2009
 - Excellent wind resources in west; load in east
- Financial Challenges
 - Off-takers of developer contracts (utility affiliates) were not creditworthy
 - How to value the renewable projects' attributes?

Texas Solutions

1. Parent utilities are ultimately responsible for their affiliate's contracts
 - Alleviates investors' concerns about creditworthiness
2. Created REC trading program
 - Quantifies value of attributes
 - Skips transmission constraints from W → E
 - Increases market liquidity for REC trading



Results:

- Projected to meet RPS early
- Increased RPS by 3000 MW in 2005

Case studies 2a: Massachusetts and 2b: New York

- Market Situation

- Restructured electricity markets
- RPS mandate created by legislature
 - MA: Incremental 4% of 2009 sales
 - NY: 25% of 2013 sales (includes 19.5% existing)



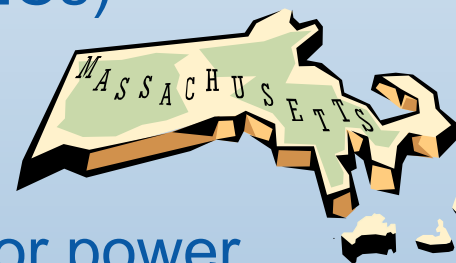
- Challenges

- Developers need to find structure acceptable to financial community
 - Utilities out of generation business
 - Retail electricity providers unable/unwilling to enter into contracts adequate for financing
- RPS policy uncertainties

Massachusetts Solution

Long-Term REC Contracts

- Electricity customers paid into State RE Trust Fund
- Past funds used to minimize REC price uncertainty
 - Up to 10 year contract, within 1st 15 years of operation
 - Competitive process evaluates projects & REC prices
 - REC purchase or option contracts
- Adequate cash escrowed, in name of project
- Trust takes on market risks associated with future REC value and demand (state will sell RECs)
- Not dependent upon terms of RPS



Remaining Issues

- Developer still needs long-term contract for power
- Not enough money allocated to fulfill entire MA RPS

New York Solution

Central Procurement by NYSERDA

- Starting in 4th Q 2005, consumers will pay into RPS-specific fund
- New RE project developers paid incentives if they:
 - Sell power into NY and
 - Do not sell attributes elsewhere.



Issues

- State sets amount collected from consumers
 - Will it be enough to reach goal?
- Money not in-hand – collected with small lead time
 - Adequate assurance for financial community?
- State pays production incentive, but no returns since no RECs to sell

Case study 3: Nevada

- Market Situation
 - Regulated electricity market
 - Restructuring repealed in 2001
 - RPS mandated by legislators (1997)
 - Increased to 20% of electricity sales by 2015 (2005)
- Challenges
 - Utilities' creditworthiness undermined by California energy crisis



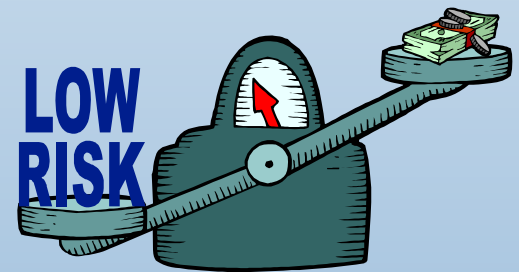
Nevada Solution

Temporary Renewable Energy Development Fund

- TRED is a temporary solution to back utility contracts, until their credit ratings improve
- Electricity consumers pay renewable energy charge, which is separate from charge for conventional power
- Independent TRED Trust receives funds and makes payments to renewable developers
- Alleviates financial community concern about risk

Issues

- How long will TRED be needed?
- What credit rating is adequate?




Extending Solutions to the Voluntary Markets



1. Will state agencies sign adequate contracts for RE?
 - To secure power and RECs for their own use?
 - To make RECs available on the voluntary market?
2. Will regulators allow utilities to sign L-T contracts?
 - In states with competition, perhaps as energy hedge?
3. Will state system benefit charge funds use some funds to finance supply for the voluntary market?
4. How to pass along fixed-P benefits to customers?
 - Replace volatile fuel charge with fixed green power charge
5. Will states support creation of REC markets?
 - Even if only a voluntary market exists.

Financing Solution Summary

Financial Issue	Solutions
Creditworthiness 	<ol style="list-style-type: none">1. Back long-term contracts with utility creditworthiness;2. Back contracts using line-item ratepayer charge through an independent fund; or3. Place adequate funds in escrow.
Uncertain value of attributes	Establish REC/attribute trading market, independent of transmission constraints
Policy uncertainty	Create solutions that persevere, despite changes to RE policies (e.g. contracts remain in effect, despite RPS changes).
Voluntary market	Which financial solutions will emerge?

Thank you for your attention!

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